CLAIMS:

1.   Display device comprising a liquid crystal material between a first substrate provided with row electrodes (7) and a second substrate provided with column electrodes (6), in which overlapping parts of the row and column electrodes define pixels (8), driving means (5) for driving the column electrodes (6) in conformity with

5   an image to be displayed, wherein column voltages $G_j(t)$ are supplyable to the column electrodes (6), wherein the column voltages $G_j(t)$ to be supplied are selectable from a predetermined number of column voltages levels; and driving means (4) for driving the row electrodes (7), wherein the row electrodes (7) supply groups of p rows (p>=1) with mutually orthogonal selection signals (F_i) for driving pixels (8) and the groups of p

10   rows are driven for the duration of a row selection time p x n_{frc} times during a superframe including n_{frc} frames for generating grey scales, wherein the row selection time is subdivided in n_{pwm} sub selection time slots and the grey scales are coded in grey scale tables having n_{frc} phases with n_{pwm} sub selection time slots, wherein for the n_{frc} frames of a superframe the grey scales are generated by using phase mixing, defining

15   which phase of grey scale coding is used for a certain frame, wherein a column voltage ($G_j(t)$) is calculated depending on the grey scales to be displayed by the p concurrently driven pixels in a column and depending on the used mutually orthogonal selection signals (F_i) for the corresponding group of rows, wherein a change in the column voltage level is defining a transition, and wherein the column voltage ($G_j(t)$) to be

20   supplied to a column electrode (6) has always less transitions per row selection time than the number n_{pwm} of sub selection time slots of the row selection time.

2.   Display device as claimed in claim 1, wherein a column voltage ($G_j(t)$) to be supplied to a column electrode (6) during a row selection time changes at most twice

25   within a row selection time by at most one column voltage level or once by two column voltage levels.

3.	Display device as claimed in claim 1 and 2, wherein the column voltage ($G_j(t)$) to be supplied to a column electrode (6) during a row selection time is calculated once per row selection time, wherein transitions in the column voltage $Gj(t)$ during the

5	row selection time are provided by increasing or decreasing the column voltage level by the respective number of column voltage levels.

4.	Display device as claimed in claim 1, wherein the grey scale table comprises a binary code for each of the x grey scales, each grey scale code appears only

10	once, wherein the x grey scale codes are arranged in n_{frc} phases, each phase having n_{pwm} sub selection time slots, wherein all logical ones and zeros within each of these grey scale codes are grouped together such that the groups of logical ones or zeros in all grey scale codes are left-aligned or right-aligned, wherein the grey scale codes having a change from logical one to zero or vice versa within a phase are arranged, such that that

15	part of the grey scale code that has the change within the phase is assigned to specific phases of the grey scale table, called PWM-phases.

5.	Display device as claimed in claim 4, wherein the grey scale codes, in the phases other than the PWM-phase do not have a change in the code during the

20	respective phases and therefore do themselves not provoke a transition of the column voltage ($G_j(t)$).

6.	Display device as claimed in claim 1, wherein the phase mixing is based on phase mixing tables, which are stored, whereby a phase mixing table defines the

25	phase in the grey scale table for a certain pixel and a certain frame.

7.	Display device as claimed in claim 4, wherein the PWM-phase in the phase mixing table, appears only once per column in a phase mixing table for a group of p rows per frame.

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8.   Display device as claimed in claim 1, whereby the column voltage ($G_j(t)$) for each sub selection time slot that is part of the row selection time during which the corresponding p rows are selected, is calculated using the equation

$$G_j(t) = \frac{1}{\sqrt{N}} \left\{ a_{0,j} * F_0(t) + a_{1,j} * F_1(t) + ... + a_{p-1,j} * F_{p-1}(t) \right\}$$

5   whereby N is the number of rows of the display, $F_i(t)$ are the orthogonal functions to be supplied to the row electrodes (7) during the row selection time and a_{ij} are the pixel states with i as an index for the row given as the row number modulo 4 and j as an index for the column, wherein the coded grey scales in the grey scale tables and the used phase mixing tables are adapted that the calculation of the column voltage $G_j(t)$

10   needs only to be performed once per row selection time, wherein a change in the grey scale code of a certain pixel is realized by an increasing or decreasing of the column voltage level by one.

9.   Display device as claimed in the claims 1 to 8, wherein the column

15   voltage $G_j(t)$ to be supplied to a column electrode (6) during a row selection time is calculated once per row selection time and a transition in the column voltage $G_j(t)$ within a row selection time is realized by increasing or decreasing the calculated column voltage level by one level.

20   10.   Display device as claimed in one of the previous claims, wherein a · mirroring of the column voltage waveform is performed by calculating the column voltage Gj(t) for the subsequent row selection time during the current row selection time.

25   11.   Display device as claimed in claim 10, wherein the column voltage waveform is mirrored on a mirror axis in the middle of a row selection time.

12.   Display device as claimed in claim 10 and 11, wherein the mirroring is performed adaptively only when the column voltage Gj(t) at the end of the current row

30   selection time is the same as the column voltage at the end of the following row

selection time.

13.   Method for driving a display device as claimed in the claims 1 – 12.